

R E M A R K S

Claims 1 to 7 as set forth in Appendix IV of this paper are currently pending in this case. Claims 1 and 2 have been amended, and Claims 5 to 7 have been added as indicated in the Listing of Claims set forth in Appendix III of this paper.

Applicants have revised Claim 1 to better bring out that the passivated iron is based on metallic iron<sup>1</sup>).

Additionally, applicants have revised the preamble of Claim 1 to refer to -elevated pressure- instead of "high pressure". The expression -elevated pressure- is used, for example, on page 6, in indicated line 8, of the application, and better corresponds to the pressure range of from 2 to 40 MPa (corresponding to 20 to 400 bar) which is specified in Claim 2. Page 1 and 3 of the specification and the abstract have been reworded accordingly. Also, in the respective sections of the specification and in the abstract the expression "high temperature" has been changed to -elevated temperature- corresponding to the temperature range recited in Claim 1 and addressed on page 7, indicated lines 6 to 11, of the application.

Applicants have also made some editorial changes in Claim 2, and have added new Claims 5 to 7 to further bring out some of the subsidiary characteristics of the catalyst precursor<sup>2</sup>), and some subsidiary embodiments of applicants' process<sup>3</sup>). No new matter has been added.

The Examiner has suggested that applicants revise the specification by introducing at the outset a cross-reference to the particulars of the international stage of this application. The Examiner's suggestion is appreciated. Applicants have refrained from adopting the Examiner's suggestion because the cross-reference is deemed to be superfluous. The respective data will appear on the face of any publication of the application, if published, as well as any patent

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- 1) The wording is supported by applicants' disclosure on page 1, indicated lines 12 and 13, in conjunction with page 5, indicated line 45, of the application.
  - 2) New Claim 5 is supported by applicants' disclosure on page 4, indicated line 31, page 3, indicated line 40, to page 4, indicated line 3, and page 4, indicated lines 5 and 6, of the application.
  - 3) New Claims 6 and 7 are supported by applicants' disclosure on page 8, indicated lines 2 to 9, of the application.

granted on the application. A repetition of those data at the outset of the specification, therefore, does not serve any purpose. It is also respectfully noted in this context that a cross-reference to the particulars of the international stage of this application is not necessary by law<sup>4)</sup> and is not to be regarded as equivalent to a cross-reference in an application filed pursuant to the provisions of 35 U.S.C. §120 which are applicable when the benefit of an earlier filing date in the U.S. is claimed.

The Examiner has rejected Claims 1 to 4 under 35 U.S.C. §102(a) as being anticipated by the teaching of *Huser et al.* (US 5,908,805). Favorable reconsideration of the Examiner's position is respectfully solicited for the following reasons.

Anticipation under Section 102 requires that a prior art reference identically shows what is claimed<sup>5)</sup>. The teaching of *Huser et al.* does not meet that requirement with regard to applicants' invention as defined in Claim 1 and further specified in the dependent claims.

Applicants' invention as defined in Claim 1 relates to a process for preparing a heterogeneous catalyst by activating a (solid) passivated catalyst precursor comprising metallic iron. According to applicants' Claim 1, the activation is conducted with hydrogen in the presence of a nitrile at a temperature of from 20 to 180°C. More particularly, applicants have found that the presence of the nitrile allows for the activation of such a passivated catalyst precursor to take place at lower temperatures and in a shorter period of time<sup>6)</sup>.

The teaching of *Huser et al.* relates to a process for regenerating a heterogeneous catalyst comprising a transition metal in an oxidation state 0 or 1, for example iron, and at least one phosphine ligand. The regeneration is achieved in aqueous solution by treating the spent metal/phosphine catalyst with hydrogen, optionally in the presence of an additional homogeneous or heterogeneous catalyst<sup>7)</sup>. *Huser et al.* further mention that the aqueous medium may comprise

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4) Note the provisions of PCT Article 27 and PCT Rule 5.

5) I.e. Titanium Metals Corp. v. Banner, 778 F.2d 775, 227 USPQ 773 (CAFC 1985); In re Marshall 577 F.2d 301, 198 USPQ 344 (CCPA 1978); In re Kalm 378 F.2d 959, 154 USPQ 10 (CCPA 1967)

6) Note, for example, page 2, indicated line 29, to page 3, indicated line 8, of the application.

7) For example col. 4, indicated lines 37 to 43, in conjunction with col. 1, indicated lines 18 to 21, of US 5,908,805.

variable amounts of compounds including butadiene and nitriles<sup>8</sup>). It is noteworthy in this context that *Huser et al.*'s respective statements merely convey that the presence of such compounds does not hinder the regeneration process, because *Huser et al.* neither teach or suggest that the respective compounds serve any particular purpose during the regeneration.

Since applicants' process is concerned with the activation of a catalyst precursor which comprises metallic iron whereas *Huser et al.*'s process relates to the regeneration of a metal complex compound, the teaching of *Huser et al.* cannot be regarded as showing exactly what is claimed by applicants. It is therefore respectfully requested that the rejection under Section 102(a) based on the teaching of *Huser et al.* be withdrawn. Favorable action is solicited.

For completeness sake it is further respectfully submitted that the teaching of *Huser et al.* cannot be considered to render applicants' invention obvious within the meaning of Section 103(a). Obviousness under 35 U.S.C. §103(a) requires that the prior art renders the subject matter as a whole obvious, and the subject matter as a whole includes not only the features of the claimed invention which are recited in the claims, but also the properties and results which are inherent in the claimed combination of features which are disclosed in the specification<sup>9</sup>). Accordingly, where applicants' process is concerned, the invention as a whole includes the particular effect of the nitrile on the conditions for activating the passivated catalyst precursor. As stated above, the teaching of *Huser et al.* neither suggests nor implies that compounds such as nitriles serve any purpose during the regeneration of the spent transition metal complex compounds. The respective compounds are, according to *Huser et al.*, merely present because they were initially introduced for, or were formed during, the reaction which was catalyzed by the fresh transition metal complex compounds. *Huser et al.*'s teaching conveys that it is not necessary to separate the dissolved spent catalyst from such compounds in order for the regeneration to be successful. It cannot, however, be regarded as suggesting that it is desirable that nitriles

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8) Col. 5, indicated line 49, to col. 6, indicated line 4, of *US 5,908,805*.

9) *Ie. In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); *In re Wright*, 848 F.2d 1216, 6 USPQ2d 1959 (Fed. Cir. 1988), overruled on other grounds in *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990) (*en banc*), cert. denied 500 U.S. 904 (1991).

are present when a passivated solid catalyst precursor<sup>10)</sup> is activated. However, to warrant a finding of obviousness under Section 103(a), the motivation to modify a prior art disclosure in any way must flow from some teaching within the art that suggests the desirability of the modification or provides for an incentive to make the specific modification which is needed to arrive at the claimed invention<sup>11)</sup>. The teaching of *Huser et al.* clearly falls short in this regard. Favorable action is respectfully solicited.

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Respectfully submitted,

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Encl.: THE SUBSTITUTE SECTION(S) OF THE SPECIFICATION (Appendix I)  
THE CHANGE(S) IN THE SPECIFICATION (Appendix II)  
THE LISTING OF CLAIMS (Appendix III)  
THE CURRENT CLAIMS (Appendix IV)  
THE SUBSTITUTE ABSTRACT (Appendix V)  
THE CHANGE(S) IN THE ABSTRACT (Appendix VI)

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10) Ie. the catalyst precursor which is employed in applicants' process, and -correspondingly- the resulting activated catalyst.

11) For example, *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (CAFC 1987); *In re Laskowski*, 871 F.2d 115, 117, 10 USPQ2d 1397, 1399 (CAFC 1989): "[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification", quoting *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (CAFC 1984).

## A P P E N D I X II:

THE CHANGE(S) IN THE SPECIFICATION (version with markings):

On page 1:

- The paragraph beginning in indicated line 6 and ending in indicated line 10 has been amended as indicated in the following:

The present invention relates to a process for [~~high temperature, high pressure~~] hydrogen activation of passivated iron useful as catalytically active component after said activation at elevated temperature and elevated pressure, which comprises effecting said activation in the presence of a nitrile at from 20 to 180°C.

On page 3:

- The paragraph beginning in indicated line 1 and ending in indicated line 5 has been amended as indicated in the following:

It is an object of the present invention to provide a process for a technically simple and economical [~~high~~] elevated temperature, [~~high~~] elevated pressure hydrogen activation of passivated iron useful as catalytically active component after the activation without the disadvantages mentioned.

## A P P E N D I X III:

THE LISTING OF CLAIMS (version with markings):

1. (currently amended) A process for [~~high pressure~~] hydrogen activation of passivated iron useful as catalytically active component after said activation at an elevated pressure, which comprises providing a passivated iron catalyst precursor comprising metallic iron, and [~~effecting said activation~~] activating said catalyst precursor in the presence of a nitrile at from 20 to 180°C.
2. (currently amended) A process as claimed in claim 1, wherein said [~~activation is effected~~] catalyst precursor is activated at from 2 to 40 MPa.
3. (previously presented) A process as claimed claim 1, wherein the nitrile used is an aliphatic nitrile.
4. (previously presented) A process as claimed in claim 1, wherein the nitrile used is a compound selected from the group consisting of adiponitrile and 6-aminocapronitrile.
5. (new) The process of claim 1, wherein said catalyst precursor comprises metallic iron and optionally one or more constituents selected from the group consisting of: carriers, promoter elements, compounds based on promoter elements, compounds based on alkali metals and compounds based on alkaline earth metals.
6. (new) The process of claim 1, wherein the nitrile is employed as a nitrile solution having a nitrile concentration of from 10 to 90% by weight.
7. (new) The process of claim 1, wherein said catalyst precursor is employed in an amount of from 1 to 50% by weight, based on the weight of the nitrile.

## A P P E N D I X VI:

THE CHANGE(S) IN THE ABSTRACT (version with markings):

Activation of passivated iron

Abstract

~~[A process for high temperature, high pressure hydrogen activation of passivated]~~ Passivated iron useful as catalytically active component after ~~[said] activation [comprises effecting said activation]~~ is activated by hydrogen at elevated temperature and elevated pressure in the presence of a nitrile.